

March 2013

Draft Economic Analysis to Support Critical Habitat Designation for the Franciscan Manzanita

Final Report

Prepared for

U.S. Fish and Wildlife Service

Prepared by

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RTI Project Number 0211700.007

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EXECUTIVE SUMMARY

ES.1 Purpose of the Economic Analysis

RTI International, under contract to the U.S. Fish and Wildlife Service (Service), is conducting an economic analysis of the proposed rule designating critical habitat for the Franciscan manzanita (*Arctostaphylos franciscana*). The purpose of this analysis is to evaluate the potential economic impacts associated with the proposed critical habitat designation for the Franciscan manzanita. The analysis considers current and future impacts to both the economic efficiency and distribution that may result from efforts to protect the Franciscan manzanita and its habitat. In addition, the evaluation also considers the benefits of the proposed action; distributional impacts on small businesses; whether the listing or designation can be seen as an unfunded mandate on local government; and if the action would significantly affect energy supply, distribution, and use.

ES.2 Description of Critical Habitat and Surrounding Economy

The Service is proposing to designate 13 critical habitat units for a total of 391 acres (ac) within the city and county of San Francisco, California. The Franciscan manzanita occupies proposed Unit 5, Inspiration Point, which is located in the Presidio and managed by the Presidio Trust. Four additional units are located within the Presidio on lands managed by the Presidio Trust and the National Park Service (NPS). The remaining eight units are located on serpentine outcrops in the central and southeastern areas of the county, primarily within local parks managed by the San Francisco Recreation and Park Department (SFRPD).

The 12 proposed unoccupied units have been proposed because the area currently occupied by the species is considered inadequate to ensure the conservation of the species. All of the proposed units contain the primary constituent elements necessary for the survival of the species.

ES.3 Key Findings

The proposed critical habitat designation for the Franciscan manzanita is anticipated to result in minimal incremental costs over the next 20 years because the proposed critical habitat is afforded many baseline protections by existing management plans and conservation activities. Table ES-1 summarizes the economic impacts of the proposed critical habitat.

Incremental impacts to economic activities are anticipated to be associated primarily with the administrative costs of Section 7 consultations. The cost of these incremental impacts is estimated to be approximately \$28,222 over the next 20 years, at an annualized cost of \$1,411.

Table ES-1. Summary of Baseline and Incremental Economic Impacts per Unit

		Unit No., \$								Total, \$
Activity		1	2	3	4	5	6-11	12	13	
Baseline	Presidio and NPS management plans	1,366	1,366	1,366	1,366	1,366	0	0	0	6,830
	Unspecified formal	8,196	8,196	8,196	8,196	8,196	0	0	0	40,982
	Unspecified informal	0	0	0	0	8,083	0	0	0	8,083
	Soil remediation	0	0	0	0	0	0	0	0	0
	Unspecified SFRPD informal	0	0	0	0	0	0	0	0	0
	Total (undiscounted)	9,563	9,563	9,563	9,563	17,645	0	0	0	55,895
	Total NPV ^a @ 3%	7,646	7,646	7,646	7,646	13,839	0	0	0	44,424
	Total NPV ^a @ 7%	6,012	6,012	6,012	6,012	10,593	0	0	0	34,639
Incremental	Presidio and NPS management plans	23	23	23	23	23	0	0	0	114
	Unspecified formal	68	68	68	68	68	0	0	0	342
	Unspecified informal	8,083	8,083	8,083	8,083	0	0	0	0	32,331
	Soil remediation	4,041	4,041	0	0	0	0	0	0	8,083
	Unspecified SFRPD informal	0	0	0	0	0	0	1,345	1,345	2,690
	Total (undiscounted)	12,215	12,215	8,174	8,174	91	0	1,345	1,345	43,559
	Total NPV ^a @ 3%	10,309	10,309	6,268	6,268	75	0	1,031	1,031	35,291
	Total NPV ^a @ 7%	8,680	8,680	4,639	4,639	58	0	762	762	28,222

Note: NPV = net present value

^aCosts for Presidio and NPS management plans as well as soil remediation have not been discounted because they are anticipated to occur within the first year of designation.

The Service, Presidio Trust, and NPS are the primary entities impacted by the additional administrative costs. The SFRPD is estimated to incur costs of approximately \$363. The proposed action will not directly impact small businesses disproportionately; impose an unfunded mandate; or significantly affect the energy supply, distribution, and use. Indirectly, no small businesses are anticipated to be affected.

ES.4 Unquantified Impacts

Indirect economic impacts associated with time delays and a misperception of the regulatory burden imposed by the proposed critical habitat designation, as well as the benefits associated with the proposed rule, were not quantified in the current analysis because of a lack of available data. Given the baseline protections of the proposed critical habitat units, we do not anticipate large indirect impacts.

ES.5 Sources of Uncertainty

Estimating the impact of a regulation on future outcomes is inherently uncertain. Administrative time for consultations and other additional costs are project dependent and exhibit wide variability. Although we relied on expert opinion and publicly available sources to estimate these costs, these are not definitive. The timing of future projects affects the present value of the cost estimates because of the time value of money, but the precise timing is uncertain. We distributed the cost of expected future consultations evenly over the time period, with the exception of consultations expected to occur in the year of designation. The quantity and type of future consultations will be influenced by economic, demographic, political, and biological variables that cannot be forecast precisely.

SECTION 1

INTRODUCTION

1.1 Purpose of the Economic Analysis

RTI International, under contract to the U.S. Fish and Wildlife Service (Service), is conducting an economic analysis of the proposed rule designating critical habitat for the Franciscan manzanita (*Arctostaphylos franciscana*). The purpose of the analysis is to estimate the foreseeable incremental economic impact of the critical habitat designation relative to a regulatory baseline without critical habitat. Incremental impacts include any changes to land or resource use, environmental quality, or time and effort expended on administrative and other activities as a result of the critical habitat designation.

The economic analysis provides the Service with information to support possible modifications to the proposed critical habitat designation. Under Section 4(b)(2) of the Endangered Species Act of 1973, as amended (Act), the Secretary of the Interior may exclude any area from critical habitat if the benefits of exclusion outweigh the benefits of inclusion, as long as exclusion will not result in the extinction of the species. The analysis will also meet the other requirements of the Act; Executive Orders 12866, 12630, and 13211; and the Regulatory Flexibility Act, Unfunded Mandates Reform Act, and all related amendments.

The analysis includes an evaluation of the economic efficiency impacts and benefits stemming from the designation. In addition, the analysis also estimates the impacts of compliance with state, local, and federal laws and other conservation actions that provide baseline protection for the species; distributional impacts on small businesses; whether the listing or designation can be seen as an unfunded mandate on local government; and if the action would significantly affect energy supply, distribution, and use.

1.2 Background

1.2.1 Species Information

The Franciscan manzanita is an evergreen shrub occurring in the San Francisco area and can be distinguished by its smooth, green leaves; dark brown fruit; and small white flowers. The plant can grow to approximately 3 feet tall and spreads outward across the ground. The Franciscan manzanita is propagated from seed, which is believed to be germinated through fire and other types of disturbance.

Currently, there is only one wild Franciscan manzanita, located within the Presidio of San Francisco (Presidio), part of the National Park System. The individual was discovered in 2009 in

the Presidio on a median near Doyle Drive and was subsequently transplanted to another site within the Presidio after an evaluation of the original and proposed site (77 FR 172:54434).

The Franciscan manzanita's historic range includes areas on or near bedrock outcrops within the San Francisco Peninsula (77 FR 172:54436). The primary cause for the decline of the Franciscan manzanita is habitat loss and degradation due to encroaching and overriding development. Additional threats to the species include nonnative competition, soil compaction, small population size, and nutrient and disease introductions.

1.2.2 Proposed Critical Habitat Designation

Because of the Franciscan manzanita's critically low numbers, limited range, and encroaching threats to the species survival, the Service listed the Franciscan manzanita as an endangered species on September 5, 2012. Additionally, the Service is also proposing to designate a total of 391 acres (ac) of critical habitat for the species within the city and county of San Francisco, California.

The proposed designated critical habitat would consist of 13 critical habitat units, with one unit currently occupied by the Franciscan manzanita. The 12 unoccupied units were proposed because the area currently occupied is considered inadequate to ensure the conservation of the species. Table 1-1 provides a summary and description of the 13 proposed units.

Table 1-1. Summary of Proposed Critical Habitat Units

Proposed Critical Habitat Unit	Currently Occupied by Franciscan Manzanita?	Associated Park Lands	Type of Ownership and Area (acres)	Potential for a Federal Nexus
Unit 1: Fort Point	No	Presidio of San Francisco	Federal: 12	High ^a
Unit 2: Fort Point Rock	No	Presidio of San Francisco	Federal: 36	High ^a
Units 3A and 3B: World War II Memorial ^b	No	Presidio of San Francisco	Federal 3A: 1 Federal 3B: 2	High ^a
Units 4A and 4B: Immigrant Point ^b	No	Presidio of San Francisco	Federal 4A: 0.7 Federal 4B: 6	High ^a
Units 5A and 5B: Inspiration Point ^b	Yes	Presidio of San Francisco	Federal 5A: 21 Federal 5B: 3	High ^a

(continued)

Table 1-1. Summary of Proposed Critical Habitat Units (continued)

Proposed Critical Habitat Unit	Currently Occupied by Franciscan Manzanita?	Associated Park Lands	Type of Ownership and Area (acres)	Potential for a Federal Nexus
Unit 6: Corona Heights	No	Corona Heights and Randall Museum	Local: 10	Low
Unit 7: Twin Peaks	No	Twin Peaks Park and Interior Green Belt	Local: 62 Private: 9	Low
Unit 8: Mount Davidson	No	Mount Davidson	Local: 11 Private: 1	Low
Unit 9A, 9B, and 9C: Diamond Heights ^b	No	Glen Park and 298 Berkeley Way Open Space	Local: 51 Private: 0.3	Low
Unit 10: Bernal Heights	No	Bernal Heights Park	Local: 24 Private: 0.3	Low
Unit 11: Bayview Park	No	Bayview Park	Local: 56 Private: 29	Low
Unit 12A and 12B: McLaren Park East ^b	No	McLaren Park	Local 12: 27	Low
Unit 13: McLaren Park West	No	McLaren Park	Local: 30	Low

^aUnit occurs on federal lands administered by NPS or Presidio Trust.

^bUnit is bisected into subunits A and B by a road, which is not part of the proposed critical habitat.

Source: Comments on How the DEA Should Estimate Incremental Costs for Franciscan Manzanita (*Arctostaphylos franciscana*) Proposed Critical Habitat Designation, September 5, 2012.

The critical habitat units were proposed because they contain the physical and biological components required for the species' survival. The Franciscan manzanita requires the following primary constituent elements (PCEs):

- areas on or near bedrock outcrops often associated with ridges of serpentine or greenstone, mixed Franciscan rocks, or soils derived from these parent materials
- areas having soils originating from parent materials identified in PCE 1 that are thin, have limited nutrient content or availability, or have large concentrations of heavy metals
- areas within a vegetation community consisting of a mosaic of coastal scrub, serpentine maritime chaparral, or serpentine grassland characterized as having a vegetation structure that is open, barren, or sparse with minimal overstory or understory of trees, shrubs, or plants that contain and exhibit a healthy fungal mycorrhizae component

- areas that are influenced by summer fog, which limits daily and seasonal temperature ranges, provides moisture to limit drought stress, and increases humidity

The Franciscan manzanita occupies proposed Unit 5, Inspiration Point, which is located in the northern portion of San Francisco County in the Presidio, managed by the Presidio Trust.¹ Four additional units are located within the Presidio on lands managed by the Presidio Trust and the National Park Service (NPS). The remaining eight units are located on serpentine outcrops in the central and southeastern portion of the county, primarily within local parks managed by the San Francisco Recreation and Park Department (SFRPD). Figure 1-1 illustrates the locations of each of the proposed units.

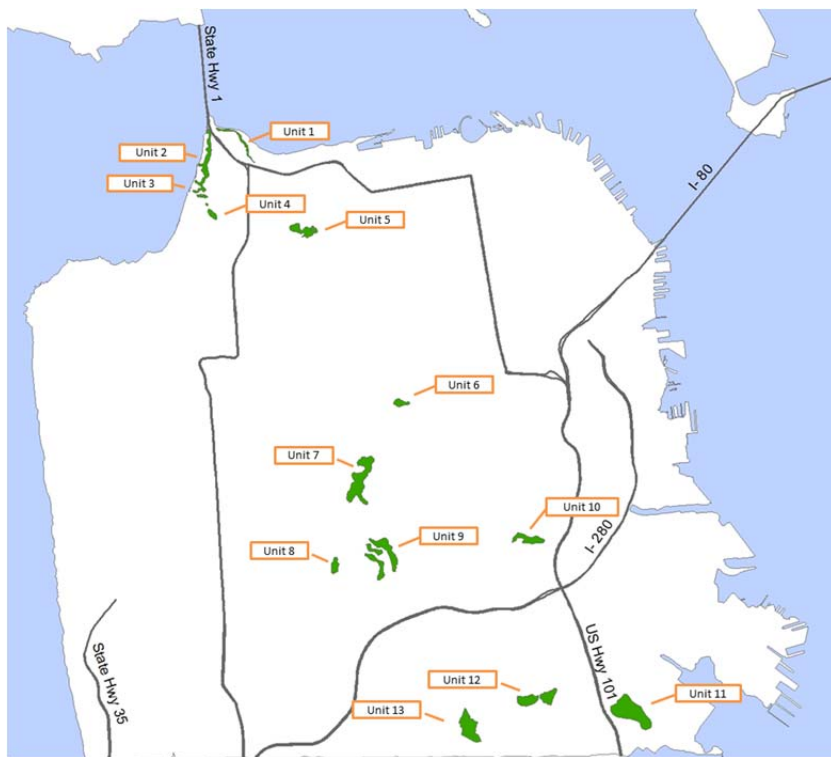


Figure 1-1. Proposed Critical Habitat for the Franciscan Manzanita

¹ The future status of the Presidio as National Park land is considered uncertain in the final listing for the Franciscan manzanita because the Act that created the Presidio Trust requires that it be self-sustaining within 15 years of operation (77 FR 172: 54444). Because the park has offset operating costs since 2004 and had a net operating income in 2012, we have not considered the possibility of changes in park management or ownership. However, additional costs may be incurred if the park were transferred to private development.

1.2.3 Historical Conservation Measures

The Franciscan manzanita was first proposed to be listed as an endangered species in 1976; however, no known wild individuals were believed to exist. The species remained unlisted until the 2009 discovery on Doyle Drive.

A conservation plan and Memorandum of Agreement between the Service, California Department of Transportation (Caltrans), NPS, California Department of Fish and Game, and Presidio Trust was enacted on December 21, 2009, to evaluate the translocation of the species from Doyle Drive to Inspiration Point and establish a framework for management, monitoring, and recovery of the species. The conservation plan includes long-term seed storage, nurturing of cuttings and seedlings at botanical gardens, management and monitoring of the wild individual, and required reporting of progress.

Because the species is located within the Presidio, it is also protected by NPS and Presidio Trust's regulations and planning frameworks. NPS and the Presidio Trust are committed to minimizing impacts to federally listed plant species and restoring habitat for these species through the Vegetation Management Plan and Presidio Trust Implementation Plan. Relevant conservation measures include prohibition of unauthorized impacts to the species or its habitat, management of invasive and nonnative species encroachment, and consideration when evaluating activities within the Presidio (Presidio Trust, 2002).

1.3 Study Area

The proposed designated critical habitat is located in San Francisco County, a predominantly metropolitan area with over 800,000 residents and a mean family income of over \$126,000 (U.S. Census Bureau, 2012, 2013). However, because the proposed critical habitat units are almost entirely located on federal and municipally owned park land, the study area is focused on the parks that contain the proposed units and the area within a 100-meter radius of the proposed units.

Units 1 through 5 are located within the Presidio of San Francisco, part of Golden Gate National Recreational Area (GGNRA). The GGNRA is one of the most visited national parks with over 14.5 million visitors a year. The 2010 requested operating budget for the GGNRA was over \$26.5 million, operated by approximately 339 staff and thousands of volunteers (NPS, 2013). NPS manages the coastal portion of the GGNRA, while the Presidio Trust, a federal agency created to rehabilitate and manage the area, manages approximately 1,491 acres within the 75,500-acre GGNRA. The 2012 approved budget for the Presidio Trust was over \$71.2 million, with a net operating income of over \$18 million (Presidio Trust, 2012).

Units 6 through 13 are primarily located within municipal parks managed by the SFRPD. The 2012 operating budget for the SFRPD is \$128.1 million, and half of the resources are dedicated to park maintenance (SFRPD, 2013a).

In intersecting census block groups adjacent to the Presidio and municipal parks, employment is primarily in the health care, professional scientific and management services, and education sectors (Table 1-2).

Table 1-2. Employment by Sector Near the Proposed Units

Sector	Unit No., %									Average Employment across Units, %
	1-5	6	7	8	9	10	11	12	13	
Mining	-	-	-	-	-	-	-	-	1	0
Construction	7	2	1	2	4	-	4	15	14	4
Manufacturing	3	8	1	7	5	9	5	-	7	5
Wholesale trade	1	2	3	-	0	2	1	29	5	2
Retail trade	10	6	4	4	6	6	8	8	7	6
Transportation	1	1	1	4	3	2	10	-	8	3
Utilities	-	-	-	1	1	-	3	-	-	1
Information	7	7	5	3	5	7	6	6	2	5
Finance and insurance	15	8	8	9	12	4	6	-	3	8
Real estate	4	5	2	5	5	-	4	-	5	4
Professional and scientific services	7	24	31	20	14	23	4	6	5	17
Management	2	1	-	-	1	-	-	-	-	0
Administration	1	1	3	3	3	3	11	-	5	3
Education	16	6	11	10	12	21	6	21	8	11
Health care	21	14	22	20	21	10	20	7	18	18
Arts and entertainment	-	2	1	4	2	5	1	-	1	2
Accommodations and other food services	1	3	2	2	2	-	2	7	5	2
Other services	1	6	3	-	0	6	4	-	7	3
Public administration	3	5	2	4	4	2	5	-	2	3
Total employed (#)	828	1,294	1,863	1,258	2,086	745	760	192	1,261	10,287

SECTION 2

METHODOLOGY

The overall objective of the economic analysis is to determine the incremental costs and benefits to society from the critical habitat designation for the Franciscan manzanita. The types of economic impacts explored in the analysis and methodology used to evaluate them are described in the sections below.

2.1 Economic Impacts of the Act

As a result of the protections implemented for the conservation of Franciscan manzanita habitat, the proposed critical habitat designation has the potential to impact economic efficiency. Impacts to economic efficiency are the welfare changes to producers and consumers. For the purposes of this analysis, we used the costs of administrative resource commitments and compliance associated with the protections afforded as a result of the Act as a proxy for these welfare losses to society resulting from consultations with the Service. The impacts of the listing and designation on economic efficiency result from the inability to apply these resources to other societal activities. For example, time spent during consultations is considered an economic efficiency impact because the opportunity to spend the time on other projects affects efficiency.

Additionally, efforts to protect the species and the habitat may also result in an uneven distribution of the economic impacts. Of particular importance are the distributional impacts to small entities. To small entities, the fixed costs of regulatory compliance can be onerous relative to their larger competitors and, thus, harm their competitive position in the market. Distributional impacts were assessed to account for any uneven impact that habitat conservation and conservation efforts have on specific localities, agencies, or businesses within the study area. The following subsections discuss the types of efficiency and distributional impacts that were evaluated as part of this economic analysis.

2.1.1 Direct Efficiency Impacts

Threatened and endangered species and their designated critical habitats are afforded a number of protections under the Act that require the commitment of resources for their administration and compliance that could serve other productive purposes within the economy. The protections and their associated costs represent the direct efficiency impacts of the Act and include the following:

- *Engagement in consultations.* Section 7(a)(2) specifies that actions with a federal nexus, defined as actions authorized, funded, or carried out by a federal agency, must be carried out in such a way that the actions are “not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical ...” To determine if the action will jeopardize the continued existence of the species (jeopardy) or adversely modify critical habitat (adverse modification), the responsible federal agency or designated nonfederal representative (action agency) must consult with the Service through formal or informal consultation if its action could affect a federally listed species or its designated critical habitat. During consultation processes with the Service, the action agency may choose to modify its proposed action to lessen the potential effects to a listed species or its designated critical habitat or incorporate conservation measures to offset potential adverse effects.
- *Prevention of removal and harm.* Section 9(a)(2) of the Act prohibits the removal and reduction into possession and malicious damage or destruction of listed plant species on Federal lands, as well as harming listed plants on other areas in knowing violation of state law (as well as the import, export, and interstate or foreign trade). To prevent harm to the Franciscan manzanita, actions may require different management actions such as implementing best management practices or restricting certain activities within the proposed critical habitat.
- *Development of incidental take permits and habitat conservation plans (HCPs).* Section 10(a) requires that a conservation plan be developed if the potential for incidental take is present. Because there is no take associated with listed plant species, the designation of critical habitat does not provide a trigger for federal or non-federal entities to pursue an incidental take permit or HCP.
- *Development of recovery plans.* Section 4(f) of the Act requires the development and implementation of recovery plans to promote the conservation of the species. The implementation of the plans may include management actions to conserve the species or habitat. Because these actions are directly related to the Act and embody changes in the way society might choose to spend time, money, and efforts, they are considered direct efficiency impacts.

Costs associated with direct efficiency impacts are estimated by working with the Service, NPS, Presidio Trust, and other relevant parties to determine the time and material requirements to implement the alternative management recommendations. Actions in which Section 7 consultations are likely to be required include National Park and Presidio Trust management and habitat restoration activities, including reinitiation of previous formal consultations, and any road or broadcast facility maintenance and construction which could impact the proposed habitat. Consultations are addressed in Sections 2.3 and 3 of the economic analysis.

2.1.2 Indirect Efficiency Impacts

Indirect efficiency impacts are costs that are attributable to the listing or designation but that are not implemented through the Act. These include the enforcement of existing federal and local laws that afford protection to the species; conservation efforts taken independent of the recovery plan or recommendations from the Service; and time delays, regulatory uncertainty, and any stigma resulting from listing or designation.

The Franciscan manzanita and its designated habitat may benefit from the conservation efforts and enforcement associated with the following federal, state, and local laws:

- **Presidio Trust Implementation Plan:** Establishes land use management and policies to protect and maintain Presidio habitats by restricting disturbances to natural habitats, prohibiting unauthorized introduction of species, and addressing any resource conflicts that may arise between recreation and conservation.
- **Presidio Vegetation Management Plan:** Provides a framework for the management of native and invasive vegetation within the Presidio. For special status plants, the plan aims to preserve and enhance species habitats through monitoring, research, and project prioritization.
- **Presidio Environmental Remediation Program:** Establishes guidance to reduce environmental contamination and restore habitat in the Presidio.
- **Presidio Trails and Bikeways Master Plan:** Protects and manages the Presidio's habitats while providing the public with trails and bikeways.
- **Golden Gate Fire Management Plan:** Establishes guidance and objectives for managing the impacts of fire on people and habitats within the GGNRA.
- **California Environmental Quality Act (CEQA):** CEQA requires proposed projects to work with state and local agencies to identify any and mitigate potential impacts to state- or federally listed species or habitat.
- **Significant Natural Resource Areas Management Plan (SNRAMP):** Developed by the SFRPD to protect and manage natural areas, the plan contains processes required to be implemented if and when listed species have been identified on land managed by the SFRPD.

2.1.3 Distributional Impacts

Although estimating the value of resources directly and indirectly attributable to the Act allows one to estimate the economic efficiency impacts, it does not provide information about how these impacts are distributed throughout society. One economic sector may be affected disproportionately to others. Although quantitatively estimating the regional distributional

impact of the listing and designation is beyond the scope of this analysis, we addressed the distributional impacts qualitatively.

2.1.4 Benefits

The primary benefit of conservation efforts associated with the listing and designation is the continued viability of the species. In addition, these efforts preserve ecosystems that can provide valuable services to the public. For example, designation of critical habitat for the Franciscan manzanita will result in protection of habitat suitable for other species, such as the Presidio manzanita and Presidio clarkia. The framework for analyzing benefits is described in Table 2-1.

The benefits associated with designation of critical habitat for the Franciscan manzanita are addressed qualitatively in this analysis.

Table 2-1. Summary Framework for the Benefits to be Included in an Economic Analysis of Critical Habitat Designation

Category	Baseline	Incremental
Species conservation and related beneficial impacts	<u>Direct</u> : Benefits of species conservation achievements directly attributable to the listing of the species. <u>Indirect</u> : Benefits resulting from other species conservation activities.	<u>Direct</u> : Benefits of species conservation achievements directly attributable to the critical habitat designation. <u>Indirect</u> : Other benefits resulting from species conservation activities undertaken in response to the critical habitat designation.

2.2 Incremental Analysis

The incremental costs consist of the difference between the baseline costs—the costs of conserving the Franciscan manzanita in the absence of designated critical habitat—and the costs attributable to conserving the species with the critical habitat designation. Although this analysis focuses on the costs of incremental impacts, baseline costs were also considered to identify and evaluate the costs solely associated with designating critical habitat. The framework for identifying baseline and incremental costs is summarized in Table 2-2 and further described below.

Table 2-2. Summary Framework for the Costs and Benefits Associated with Listing and Critical Habitat Designation

Category	Baseline	Incremental
Administrative	<u>Direct</u> : Costs of consultation with the Service to analyze impacts to listed species.	<u>Direct</u> : Additional costs of consultation with the Service to analyze impacts to critical habitat.
Project modifications	<u>Direct</u> : Costs of reasonable and prudent alternatives to avoid jeopardy. <u>Indirect</u> : Cost of modifications voluntarily adopted in occupied units.	<u>Direct</u> : Additional costs of implementing reasonable and prudent alternatives to avoid adverse modification. <u>Indirect</u> : Cost of modifications voluntarily adopted in unoccupied units.
Additional impacts	<u>Direct</u> : Change in land values and use patterns or other costs directly resulting from the species listing. <u>Indirect</u> : Costs of additional compliance and conservation efforts providing species protection not required by the Act.	<u>Indirect</u> : Costs of additional compliance and conservation efforts not required by the Act and attributed to the critical habitat designation. Other costs borne by private or public entities such as time delays, regulatory uncertainty, or any perceived stigma resulting from the critical habitat designation.

Actions with a federal nexus taking place in proposed habitat units currently occupied by the Franciscan manzanita will require consultations with or without the designation of critical habitat. In the unit occupied by the Franciscan manzanita, adverse modification findings would most likely also be correlated with jeopardy findings (U.S. FWS, 2012). Therefore, the incremental cost of designating critical habitat for Unit 5 is the adverse modification analysis during a formal consultation (Table 2-3).

Table 2-3. Baseline and Incremental Administrative Costs of Consultations by Presence of Listed Species

Consultation Type	Required Actions	Occupied Habitat (Unit 5)	Unoccupied Habitat (Units 1–4 and 6–11)
Informal consultation	Biological assessment and response letter	Required in absence of habitat designation	Incremental
Formal consultation	Biological opinion	Required in absence of habitat designation	Incremental
	Include adverse modification analysis in biological opinion	Incremental	Incremental

In proposed critical habitat units that are not occupied by the Franciscan manzanita, Section 7 consultations are required for any activities with the potential to impact the designated critical habitat. In such cases, all associated consultation and project modification costs would be identified as incremental costs of critical habitat designation.

Several of the unoccupied proposed critical habitat units are occupied by other listed species, which would require consultations without the designation of critical habitat for the Franciscan manzanita. Based on guidance from the Service, the economic analysis will not consider the presence of other listed species and associated consultation requirements. The analysis will include qualitative discussions regarding how considering other listed species would influence the estimates of the incremental impacts of critical habitat designation.

2.3 Section 7 Consultations

For activities with a federal nexus that may adversely affect the species or designated critical habitat, the agency funding, authorizing, approving, or undertaking the activity must consult with the Service, formally or informally. To date, no consultations for the Franciscan manzanita have taken place. However, one consultation for the Presidio clarkia has occurred to determine whether the translocation of the Franciscan manzanita would adversely affect the endangered Presidio clarkia at Inspiration Point. The Service found that the reintroduction was not likely to impact the species (U.S. FWS, 2012).

Informal Consultations. If the action is not likely to adversely affect the species or its designated critical habitat, the agency may choose to initiate an informal consultation. Informal consultations involve coordination between the Service and the action agency; collection and assessment of relevant data to support that the action is not likely to impact the species or its habitat; and, if needed, development of conservation measures that minimize the likelihood of adverse impacts. If the Service determines that adverse impacts are possible, the consultation then progresses to a formal consultation.

Both the Service and the action agency incur costs associated with consultations. Costs to the Service of informal consultation include administrative costs of correspondence, determining the appropriate conservation efforts to recommend, and preparing a response expressing concurrence that the action is not likely to adversely affect the listed species or its designated critical habitat. The action agency also incurs administrative costs of corresponding with the Service; collects the information required by the Service; and, if applicable, modifies the action to reduce the likelihood of adverse effects and avoid a formal consultation. The indirect impact of these consultations is estimated to be up to a month's delay in project implementation.

For informal consultations associated with projects impacting the Franciscan manzanita, it is estimated that the Service would spend approximately 36 hours to consult, review all relevant technical information, and develop a letter of concurrence for the finding of no adverse effects or not likely to adversely affect. For informal consultations associated with proposed units within the Presidio, it is estimated that NPS and Presidio Trust would jointly spend 30 to 40 hours in consultation with the Service, coordinating all required technical information and developing any required conservation measures. If a federal nexus were to occur regarding proposed units located within municipal parks, it is estimated that the SFRPD would spend 10 to 20 hours for an informal consultation with the Service to coordinate all required technical information and develop any required conservation measures (Table 2-2).

Formal Consultations. Activities that are likely to impact the species or its designated critical habitat must undergo a formal consultation, which, at a minimum, involves coordination between the Service and the action agency; collection and assessment of relevant data; and development of a Biological Opinion, including the jeopardy and adverse modification analyses. Formal consultations may also result in developing reasonable and prudent alternatives to avoid jeopardy and adverse modification, depending on the anticipated impact of the action.

A formal consultation requires that the Service produce a Biological Opinion, which includes a determination if the action is likely to result in jeopardy or adverse modification and provides reasonable and prudent alternatives to the proposed action. The action agency incurs the administrative costs of preparing the necessary project documentation and Biological Assessment for the Service, the costs of implementing the reasonable and prudent alternatives, and the costs to monitor measures designed to reduce the adverse effects to critical habitat. The indirect cost of a formal consultation is the time delay in project implementation, which can be up to 135 days, unless the federal action agency and the Service mutually agree to extend the consultation period.

Formal consultations in the absence of designated critical habitat are estimated to require 120 hours of Service time to develop a Biological Opinion for new consultations. Reinitiated consultations (e.g., NPS and Presidio management plans) are estimated to require 40 hours of time by the Service. Formal consultations following designation of critical habitat are expected to require an additional 2 hours of Service time to conduct the adverse modification analysis and incorporate an adverse modification finding in the Biological Opinion. For formal consultations associated with proposed units within the Presidio, it is estimated that NPS and Presidio Trust would jointly spend 80 hours for reinitiated consultations and 80 to 160 hours for new

consultations. No formal consultations are anticipated for proposed units outside of the Presidio (Table 2-4).

Table 2-4. Administrative Labor Hours of Section 7 Consultations by Entity

	Informal		Formal		
	New Consultation	Consideration of Habitat Modification	Re-initiation	New Consultation	Adverse Modification
Service ^{a, b}	36	Included in consultation	40	120	2
NPS and Presidio Trust ^{b, c}	30–40	Included in consultation	80	80-160	0
SFRPD	10–20	Included in consultation		N/A	

^a Estimate provided by the Service, personal communication.

^b According to the Incremental Effects Memorandum, the existence of the species is closely tied to the critical habitat. Therefore, consultations will generally consider adverse modification of habitat and jeopardy in tandem. Only the development of an adverse modification determination is expected to incur administrative effort (U.S. FWS, 2012).

^c Estimate provided by NPS and the Presidio Trust, personal communication.

The costs of these labor hours are determined using the appropriate wage category by economic activity adjusted to reflect fringe benefits and overhead costs of employment. Administrative efforts for all anticipated consultations are expected to be performed by wildlife biologists. Table 2-5 presents the hourly wage and cost of employment by entity.

Table 2-5. Hourly Wage and Cost of Employment by Entities with Administrative Costs in Section 7 Consultations

Sector—Occupation	Wage			Cost of Employment, \$
	Mean Hourly Wage, \$	Total Benefits as Percentage of Wage	Overhead Rate as Percentage of Wage	
Federal—Wildlife Biologist	37.30	36.25	16.35	56.92
Municipal—Wildlife Biologist	28.06	35.3	17.00	42.74

Sources: Office of Management and Budget. 2003. "Performance of Commercial Activities (OMB Circular A-76)." Available at http://www.whitehouse.gov/omb/circulars_a076_a76_incl_tech_correction. Accessed November 7, 2012

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It should be noted that the amount of administrative time required in a consultation, formal or informal, is project dependent. For example, if and when an action involves large-scale activities with the potential to adversely impact the species or its habitat, the time and effort to address the action would likely be proportional to the number of activities being evaluated. Additionally, some activities may require more effort to fully understand and address the potential for impact.

2.4 Projecting and Discounting Future Costs and Benefits

This analysis projects the costs and benefits of the critical habitat designation 20 years into the future, from 2013 to 2032. All projected monetary values in the report are discounted using a 7% discount rate unless otherwise specified.

2.5 Sources of Uncertainty

Estimating the impact of a regulation on future outcomes is inherently uncertain. Key sources of uncertainty for the projections include

- the timing of future consultations and conservation measures;
- assumptions and estimates made through expert elicitation;
- assumptions based on publicly available sources, proxies, and extrapolation; and
- the annual distribution of costs.

The quantity and type of future consultations will be influenced by economic, demographic, political, and biological variables that cannot be predicted with certainty. To minimize the amount of uncertainty, we relied on available data and expert knowledge to estimate proposed or recommended projects and number of consultations.

SECTION 3

ECONOMIC ACTIVITIES

The proposed critical habitat designation for the Franciscan manzanita may potentially affect the following economic activities:

- National Park and Presidio Trust management and habitat restoration activities
- road maintenance and construction
- broadcast facility maintenance and construction
- other activities, such as SFRPD trail maintenance and species reintroduction

We estimated one formal consultation for reinitiation of the formal consultations associated with the National Park and Presidio Trust management plans to occur immediately as a result of the proposed designation, as projected by NPS. Additionally, the Presidio Trust anticipates three more formal consultations over the next 20 years for unspecified actions within the Presidio.

We estimate a total of 12 informal consultations within the Presidio, including two for habitat restoration activities anticipated by NPS. These two consultations are anticipated to occur within the next year and involve remediation of contaminated soils within unoccupied units. The remaining 10 consultations are projected for unspecified actions over the next 20 years, based on estimates provided by the Presidio Trust and NPS.

Regarding road maintenance and construction, Caltrans (2013) indicated in personal communication that any projects on the roads adjacent to the proposed units would not likely affect the species or the proposed critical habitat; however, no projects are anticipated. Similarly, no maintenance and construction projects related to radio and broadcast towers are expected to affect the species (Presidio Trust, 2013).

One informal consultation was conservatively estimated to account for any federally funded trail maintenance on SFRPD lands. With regard to other activities on nonfederal lands, the potential for federal nexus is very low. Therefore, no consultations were estimated for miscellaneous activities on nonfederal land. Lastly, any consultation regarding species reintroduction would be considered intra-Service consultation and consist of little (if any) administrative effort. Therefore, no consultations were estimated to account for these activities.

The costs of these consultations were distributed across the units according to the best information available, provided by the Service, NPS, Presidio Trust, and the SFRPD. All formal consultations discussed above were assumed to consider both occupied and unoccupied proposed units and are, therefore, considered baseline impacts, with the exception of the adverse modification determination. The informal consultations for soil remediation and SFRPD trail maintenance were assigned to specific unoccupied units and are considered incremental impacts. For the unspecified informal consultations anticipated within the Presidio, the costs were distributed evenly across all proposed units within the Presidio, amounting to approximately eight informal consultations associated with unoccupied units and two informal consultations associated with the occupied unit over the study period. Using the administrative labor hours presented in Table 2-4 and costs presented in Table 2-5, the undiscounted baseline and incremental costs associated with consultations are presented in Table 3-1.

Table 3-1. Costs of Consultations by Economic Activity from 2013 to 2032

Activity	Potential to Affect	Consultations		Cost (Undiscounted)	
		Informal	Formal	Baseline, \$	Incremental, \$
Presidio and NPS management plans	Occupied and unoccupied	0	1	6,830	114
Unspecified formal	Occupied and unoccupied	0	3	40,982	342
Unspecified informal	Any unit	10	0	8,083	32,331
Soil remediation	Unoccupied	2	0	0	8,083
Unspecified SFRPD informal	Unoccupied	1	0	0	4,041
Total		13	4	55,895	44,910

This analysis does not consider the listed species that are presently located in proposed Units 1, 3, 4, 5, and 7 and potentially located in 11, 12, and 13. If activities occur that would require consultation to ensure that the proposed designated habitat for the Franciscan manzanita is not impacted, it is likely that a consultation would also be required for the other listed species occupying the unit. Furthermore, many of the listed species occupying the units have similar habitat requirements as the Franciscan manzanita. Thus, many of the costs considered incremental for the purposes of this analysis may be attributable to other listed species. Therefore, the administrative effort and costs presented in the analysis are likely overestimated for proposed units occupied with other listed species. However, as indicated in Section 2, the

economic analysis does not consider the presence of other listed species and associated consultation requirements, based on guidance from the Service.

The analysis also conservatively assumes that all unoccupied units will remain unoccupied for the next 20 years. It should be noted that Presidio Trust and the Service are expected to reintroduce the Franciscan manzanita using cuttings that are currently located in nurseries. Because the exact timing of the reintroductions is unknown, all of the costs associated with unoccupied units were considered incremental. However, as these cuttings are introduced to the units, all consultation costs with the exception of adverse modification analyses (\$114 per unspecified formal consultation, undiscounted) are expected to become baseline costs.

3.1 National Park Management Plan Administration and Restoration Activities

Units 1 through 5 are located within the Presidio of San Francisco, a designated National Historic Landmark and part of the GGNRA. Actions that may affect these units will require a Section 7 consultation, and previous formal consultations for ongoing management and administrative activities will need to be reinitiated to include jeopardy and adverse modification determinations for the Franciscan manzanita and its critical habitat.

3.1.1 Formal Consultations

The following formal consultations will need to be reinitiated due to the listing and designation of critical habitat for the Franciscan manzanita:

- Formal Consultation and Biological Opinion on the Presidio Trails and Bikeways Master Plan, Presidio Environmental Remediation Program, Presidio Trust Implementation Plan, and Vegetation Management Plan (1-1-02-F-0228)
- Formal Consultation on the Fire Management Plan for Muir Woods National Monument, Golden Gate National Recreation Area, and Fort Point National Historic Site in Marin, San Francisco, and San Mateo Counties, California (81420-2005-F-0104)

The reinitiation of these consultations was assumed to be handled as one formal consultation, managed jointly by NPS and Presidio Trust.

Because this consultation relates to all five units in the Presidio of San Francisco, costs were distributed evenly across the units. Furthermore, no costs are anticipated due to reasonable and prudent alternatives or project modifications because the previous consultation (1) considered other listed species with similar PCEs as the Franciscan manzanita, such as the

Presidio manzanita and the Presidio clarkia, and (2) resulted in a determination that the adverse effects anticipated were not likely to jeopardize the continued existence of the listed species.

Only the costs of including the adverse modification analysis in the Biological Opinion are considered incremental. Furthermore, these costs were not discounted because the reinitiated consultation is assumed to take place immediately after the designation. Table 3-2 summarizes the costs associated with reinitiating NPS and Presidio management plan consultations.

Table 3-2. Undiscounted Costs of Reinitiated Consultations for NPS and Presidio Trust Management Plans

		Unit No., \$					Total, \$
		1	2	3	4	5	
Baseline	Service	455	455	455	455	455	2,277
	Action Agency	911	911	911	911	911	4,554
Incremental	Service	23	23	23	23	23	114
	Action Agency	0	0	0	0	0	0
Total costs (undiscounted)		1,389	1,389	1,389	1,389	1,389	6,944

Three additional formal consultations are anticipated over the next 20 years for unspecified actions within the Presidio. These consultations are assumed to be associated with park management or other large-scale actions and therefore were considered applicable to all units within the Presidio. Similar to above, only the costs associated with the adverse modification determination is considered incremental and no reasonable and prudent alternatives are anticipated, because the Presidio Trust and NPS have worked with the Service for many years to ensure the conservation of habitat and listed species (NPS, 2012). However, costs were distributed evenly over 20 years because the timing of the consultations is uncertain. Table 3-3 summarizes the costs associated with the three unspecified formal consultations for NPS and the Presidio Trust.

Table 3-3. Costs of Formal Consultations to the Service, NPS, and Presidio Trust Management Plans for Unspecified Activities

		Unit No., \$					Total, \$
		1	2	3	4	5	
Baseline	Service	4,098	4,098	4,098	4,098	4,098	20,491
	Action agency ^a	4,098	4,098	4,098	4,098	4,098	20,491
Incremental	Service	68	68	68	68	68	342
	Action agency	0	0	0	0	0	0
Total costs (undiscounted)		8,265	8,265	8,265	8,265	8,265	41,324
NPV @ 3%		6,332	6,332	6,332	6,332	6,332	31,662
NPV @ 7%		4,681	4,681	4,681	4,681	4,681	23,404

^a NPS and Presidio are jointly considered the action agency.

3.1.2 Informal Consultations

In total, 12 informal consultations are estimated for the Presidio Trust and NPS over the next 20 years. Two of the consultations are anticipated to occur within the next year and involve remediation of contaminated soils located in the unoccupied proposed Units 1 and 2. Therefore, the entire cost associated with the consultations is considered incremental. No reasonable and prudent alternatives are anticipated because the action is being undertaken to improve the habitat (NPS, 2013). Costs were not discounted because the consultations are assumed to take place immediately after the designation. Table 3-4 summarizes the costs associated with the informal consultations for soil remediation with NPS and the Presidio Trust.

Table 3-4. Costs of Informal Consultations to the Service, NPS, and Presidio Trust for Soil Remediation in Unoccupied Units

		Unit No., \$		Total, \$
		1	2	
Baseline	Service	0	0	0
	Action agency	0	0	0
Incremental	Service	2,049	2,049	4,098
	Action agency	1,992	1,992	3,984
Total costs		4,041	4,041	8,083

Ten additional informal consultations are anticipated over the next 20 years for unspecified actions within the Presidio. These consultations are assumed to be small and isolated in nature that could be applicable to any of the units within the Presidio. Therefore, the costs were distributed evenly across all the proposed units within the Presidio, assuming eight informal consultations associated with unoccupied units and two informal consultations associated with occupied units. No reasonable and prudent alternatives are anticipated. Costs were distributed evenly over 20 years because the timing of the consultations is uncertain. Table 3-5 summarizes the costs associated with the unspecified informal consultations for NPS and the Presidio Trust.

Table 3-5. Costs of Informal Consultations to the Service, NPS, and Presidio Trust for Unspecified Management Activities

		Unit No., \$					Total, \$
		1	2	3	4	5	
Baseline	Service	0	0	0	0	4,098	4,098
	Action agency	0	0	0	0	3,984	3,984
Incremental	Service	4,098	4,098	4,098	4,098	0	16,393
	Action agency	3,984	3,984	3,984	3,984	0	15,938
Total costs (undiscounted)		8,083	8,083	8,083	8,083	8,083	40,413
NPV @ 3%		6,193	6,193	6,193	6,193	6,193	30,964
NPV @ 7%		4,581	4,581	4,581	4,581	4,581	22,905

3.2 Road Maintenance and Construction

According to Caltrans (2013), no projects are anticipated on the roads adjacent to the proposed units that are likely to affect the species or the proposed critical habitat. Consequently, no consultations or conservation measures are projected regarding these activities.

3.3 Broadcast Tower Maintenance and Construction

No anticipated broadcast tower projects are anticipated that would likely affect the species or the proposed critical habitat. Consequently, no consultations or conservation measures are projected regarding these activities.

3.4 Other Activities

Although the SFRPD does not have and is not currently applying for federal funding for the proposed units, the possibility of applying for grant money within the next 20 years for trail updates in McLaren Park was noted in personal communication (SFRPD, 2013b). Therefore, one informal consultation was conservatively included in the analysis to account for any federally funded trail maintenance within a unit managed by the SFRPD. All of the nonfederally located proposed units are unoccupied; therefore, the entire cost of the consultation was considered incremental. No reasonable and prudent alternatives are anticipated (U.S. FWS, 2013). Costs were distributed evenly over 20 years because the timing of the consultations are unknown. Table 3-6 summarizes the costs associated with the informal consultations for the Service and the SFRPD.

Table 3-6. Costs of Informal Consultations to the Service and SFRPD for Potential Trail Maintenance

		Unit No., \$		Total, \$
		12	13	
Baseline	Service	0	0	0
	Action agency	0	0	0
Incremental	Service	1,025	1,025	2,049
	Action agency	321	321	641
Total costs (undiscounted)		1,345	1,345	2,690
NPV @ 3%		1,031	1,031	2,061
NPV @ 7%		762	762	1,525

The only other consultations that may be anticipated include reintroduction of the Franciscan manzanita into areas where other endangered species, such as the mission blue butterfly, are present. Reintroduction consultations are likely to be intra-Service, and costs are likely to be minimal and administrative in nature. Furthermore, the costs would be considered baseline costs.

SECTION 4

CONSERVATION ACTIVITIES

In addition to the costs of consultations, conservation costs are related to the 2009 Conservation Plan (Presidio Trust, 2013). These costs are considered indirect baseline costs because they are independent of the listing and not related to the critical habitat designation. They include \$15,000 for maintenance and establishment of cuttings at botanical gardens, \$1,500 for long-term seed storage, and over \$100,000 for maintenance, monitoring, and reporting on the translocated individual now located at Inspiration Point. These costs cover the first 10 years of the Conservation Plan.

Conservation costs are also associated with the reintroduction of the species. The Presidio Trust estimates that they will spend approximately \$6,000 on plant-related costs and over \$11,000 on staffing costs over the next 5 years to reintroduce the Franciscan manzanita in the Presidio.

If we assume that monitoring and reporting will continue after 2018, the total cost of conservation activities for the next 20 years is anticipated to be \$101,813. These costs are considered entirely indirect baseline costs for the analysis. Table 4-1 presents the project's costs of conservation activities.

Table 4-1. Indirect Baseline Costs of Conservation for the Franciscan Manzanita, \$

	Takeover of Monitoring and Reporting	Plant Propagations	Planning for Re- establishment	Nursery Nurturing	Seed Storage	Total Conservation Activities
Nominal cost	148,505	6,000	11,384	30,000	2,100	197,989
NPV @ 3%	103,360	5,661	10,740	22,986	1,462	144,208
NPV @ 7%	66,142	6,120	11,612	17,003	935	101,813

Costs are also associated with any protections the species and habitat receive from federal, state, and local plans and policies. These may include the Presidio Trust and NPS management plans as well as SNRAMP.

SECTION 5

BENEFITS OF CONSERVATION

The incremental benefit of the critical habitat designation is primarily the value of the information provided by defining the PCEs of Franciscan manzanita habitat necessary to support species survival and recovery. To the extent that this information decreases the probability of species extinction, it contributes to the nonuse preservation value enjoyed by society.

Additional baseline benefits of protections to critical habitat include protection of habitat that may be suitable to other rare species, such as the Presidio manzanita and Presidio clarkia. Beyond rare species themselves, there are also benefits related to the rare communities that are found within the designated critical habitat. These communities include elements of coastal sage scrub, maritime chaparral, and open grassland, which are found as remnants left in the urban fabric of the San Francisco Peninsula. The distribution of the critical habitats throughout the peninsula potentially allows for gene flow among plant populations, both from pollen and pollinator dispersal. Critical habitat designation also enhances the potential for maintaining mycorrhizal assemblages, which are important for nutrient dynamics within these communities. In a sense, designating critical habitat has the added benefit of maintaining representative pockets of these rare communities.

Further benefits result from these communities being found in an urban setting. Simply being able to walk to these designated habitats and enjoy seeing the plants and fauna is of value. There is also a nonuse value of knowing that these rare communities exist within an urban setting. Lastly, these remnant communities provide some opportunity for researchers to better understand both dispersal mechanisms and limitations and the corridors connecting communities within an urban context.

SECTION 6

SMALL BUSINESS SCREENING ANALYSIS

The Regulatory Flexibility Act, as amended by the Small Business Regulatory Enforcement Fairness Act, requires that a regulatory flexibility screening analysis be conducted to estimate if a proposed regulation will have a significant impact on a substantial number of small entities (SISNOSE). If a SISNOSE is determined, then a full regulatory flexibility analysis must be conducted.

The first step in making this determination is to screen for affected small entities to determine whether there could be a SISNOSE. Small entities are defined based on the following definitions:

- Small business: Defined by the Small Business Administration's general size standard definitions for the industry category of the ultimate parent companies.
- Small government: Defined as any jurisdiction with a population less than 50,000 (excluding states and Tribal organization).
- Small nonprofit: Defined as a 501(c)3 "independently owned and operated and is not dominant in its field" (5 U.S.C. section 601(4)).

A significant economic impact threshold is generally a 3% impact as measured by appropriate quantitative metrics, such as the annualized cost of compliance as a percentage of sales, government revenue, or annual operating expenditures. In general, if more than 20% of the affected small entities experience a significant economic impact, then there is considered to be a SISNOSE, and a regulatory flexibility analysis must be prepared.

For there to be a SISNOSE associated with designating critical habitat, then the incremental direct compliance costs must exceed the 3% threshold for more than 20% of the affected small entities. Since the Service, Presidio Trust, National Park Service, and the SFRPD are the only entities with expected direct compliance costs and are not considered small entities, this rule will not result in a SISNOSE.

SECTION 7

ENERGY IMPACTS ANALYSIS

Executive Order 13211¹ requires the Service to consider the impact of the proposed listing and critical habitat designation on the energy industry. As stated in the Executive Order, agencies must consider whether their actions will have “(i) any adverse effects on energy supply, distribution, or use (including a shortfall in supply, price increases, and increased use of foreign supplies) should the proposal be implemented, and (ii) reasonable alternatives to the action with adverse energy effects and the expected effects of such alternatives on energy supply, distribution, and use.”

Energy supply, distribution, and use are not expected to be impacted by the proposed listing or designation of critical habitat and no energy impacts are anticipated.

¹ Executive Order 13211 of May 18, 2001. “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use.”

SECTION 8

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